

ABSTRACT OF THE DISCLOSURE

A laser annealing apparatus is provided in which  
laser light is irradiated onto an amorphous semiconductor  
layer placed inside an annealing chamber (100) through a  
chamber window (120), thereby poly-crystallizing the  
amorphous semiconductor film. Inside the annealing  
chamber 100 a low degree vacuum (about  $1.3 \times 10^3$  Pa to  
about 1.3 Pa) is maintained at a room temperature. An  
inert gas such as nitrogen, hydrogen, or argon is  
introduced into the atmosphere while maintaining the low  
degree vacuum. As a result, the surface smoothness of the  
polycrystalline semiconductor layer is comparable to that  
resulting from high degree vacuum annealing, while, unlike  
high degree vacuum annealing, there is less contamination  
of the chamber window (120) and productivity is improved.